



division of polymer chemistry, inc.

AMERICAN CHEMICAL SOCIETY



Polymer Technology Conference

40th Anniversary Conference of the
ACS Polymer Division

June 2-5, 1991

Wyndham Franklin Plaza Hotel
Philadelphia, PA

Organizing Committee R.M. Ottenbrite, Chairman; J.C. Salamone, Technical Program Chairman; N.G. Gaylord, B.C. Anderson, J.E. McGrath, Technical Program Co-Chairmen; J.M. Stouffer, A.B. Salamone, Exhibition; J. Raybolt, Intersocietal Affairs; W.H. Daly, Treasurer; B.M. Culbertson, J.S. Riffle, Preprints; T.J. Pacansky, Publicity; A.D. Broske, S.C. Israel, Arrangements.

Polymer Technology Conference

The Polymer Division of the American Chemical Society is celebrating its 40th anniversary in 1991 by hosting a major technological meeting in several areas of industrial interest. In addition, an exhibition will be presented during the meeting and three short courses will be offered on the subjects, "Simulating Polymer Bulk Properties," "Polymers for Applications in Nonlinear Optics," and "Polymer Chemistry for Teachers." The conference will be held at the Wyndham Franklin Plaza Hotel in downtown Philadelphia. Room costs are \$95 single, \$115 double, plus taxes. Room reservations should be made directly with the hotel, telephone (215) 448-2000.

The Polymer Technology Conference program is organized by J.C. Salamone, with N.G. Gaylord, B.C. Anderson and J.E. McGrath serving as co-chairmen. The conference registration fee includes admission to the technical sessions, exhibits and a mixer on Monday evening. A ticketed banquet will be available on Monday evening following the mixer.

To register for the Polymer Technology Conference and/or the short courses, complete the registration form and mail it with full payment to Diane M. Morrill, ACS Division of Polymer Chemistry, Inc., 1103 Chemistry Research Building, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0212, telephone (703) 231-3029. The Polymer Division does not accept credit cards.

Technical Program Short Courses

Sunday, June 2, 1991

Simulating Polymer Bulk Properties

1:00pm - 4:00pm, Salons 5 and 6

Construct models of bulk polymer systems (crystalline/amorphous); and study relative changes after exposure to mechanical deformation (stress-strain), temperature deformation, and solvent effects. The deposition of metals onto polymeric materials using a unified atom technique will be displayed and relative adhesion will be calculated. Dr. John Puglia and Dr. Rudy Potenzzone, Jr., Polygen Corp., 200 Fifth Avenue, Waltham, MA 02254, (617) 890-2175 x 271.

Polymers for Applications in Nonlinear Optics

9:00am - 4:00pm, Salon 9

Fundamentals of Nonlinear Optical (NLO) Phenomena; the design and synthesis of polymers for applications in second and third-order NLO; characterization and evaluation of NLO materials; potential applications for NLO polymeric materials. Dr. Gregory Baker, Bellcore, 331 Newman Springs Road, Red Bank, NJ 07701, (201) 758-2932.

Polymer Chemistry for Teachers

1:00pm - 4:00pm, Philadelphia Room South

Introduction to Polymer Chemistry, specially designed for teachers of high schools and introductory college chemistry. Fundamental principles and recent developments. Lab experiments and lectures. Workshop booklet and resource materials included. Dr. John P. Droske, Dept. of Chemistry, University of Wisconsin - Stevens Point, Stevens Point, WI 54481-3897, (715) 346-3703.

Symposia

Welcome Reception

Sunday, June 2, 1991

Enhancement of Polymer Properties Through Mechanical or Chemical Means

T.J. Dolce and V. Gabara, Organizers

Monday, June 3, 1991

Philadelphia Ballroom
H.H. Yang, Presiding

- 9:05 - 1. Processing for High Performance. A Zachariades
9:45 - 2. Toughness Enhancement of Filled Polypropylene Blends and Composites. *E. Baer, F. Lisy, A. Hiltner*
10:10 - 3. Processing, Properties and Applications of Fibers from Thermotropic Liquid Crystalline Copolyesters. *G. Farrow.*
10:35 - 4. Processing Methods to Obtain Enhanced Properties in Thermotropic Liquid Crystalline Polymers and Their Blends. *K.G. Blizard, R. Haghghat, R.W. Lusignea*
11:00 - 5. Development of Morphology in a Polyblend by Controlled Mixing in Single (Reciprocating) Screw Extruder. (RSSE) *A.P. Plochocki, S. Jacopin*
11:25 - 6. Incremental Drawing of Synthetic Fibers. *M.V. Sussman*

Polymers for Designed Applications

James E. McGrath, Organizer

Monday, June 3, 1991

Wyndham Ballroom B
James E. McGrath, Presiding

- 9:00 - 7. Introductory Remarks
9:10 - 8. Hypercrosslinked Rigid-Rod Polymers. *O. Webster F.P. Gentry, R.D. Farlee, B.E. Smart*
10:05 - 9. Synthesis and Characterization of High Temperature Stable Optical Wave Guides. *C. Feger*
11:00 - 10. Styrene-Methacrylonitrile Thermoplastic and Foam: A Comparison with Styrene-Acrylonitrile. *G. Crocco, H.S. Kesling*

Recycling of Polymers

G.D. Andrews and P.M. Subramanian, Organizers

Monday, June 3, 1991

Wyndham Ballroom C
P.M. Subramanian, Presiding

- 9:00 - 11. The Environmental Compatibility of Polymers. *F.P. Boettcher*
9:35 - 12. Status of Recycling in the Automobile Industry. *S.S. Labana*
10:10 - 13. The Role of Biodegradable Polymers in Waste Management. *R. Narayan*
10:45 - 14. Waste to Energy Recycling. *T.J. Hassell*
11:20 - 15. Plastics Recycling - Products Applications and Future Potential. *R.A. Bennett*

High Performance Polymers

P.M. Hergenrother and N.J. Johnston, Organizers

Monday, June 3, 1991

Wyndham Ballroom D
J. Connell, Presiding

- 8:30 - 16. Chemistry and Properties of Poly(arylene ether pyrazole)s Via Aromatic Nucleophilic Displacement Reactions. *K.R. Srinivasan, R.G. Bass, J.G. Smith*
9:00 - 17. Poly(arylene ether imidazole)s Containing Pendent Groups. *J.W. Connell, C.I. Croall*

- 9:30 - 18. Poly(imidoarylether ketone)s and Poly(imidoarylether sulfone)s Derived from Phenolphthalein. *M. Strukelj, A.S. Hay*
10:00 - 19. Biphenyl Bases Poly(aryl ether)s. *R.A. Clendinning, M.J. El-Hibri, M. Natzner, G.T. Kwiatkowski*
10:30 - 20. A New Route to Poly(ether ketone)/Liquid Crystalline Block Copolymers. *R.J. Kumpf, N. Pielartzik, D. Wicks, D. Nerger, R. Webrmann*
11:00 - 21. New Fluorinated Poly(aryl ether)s and Related Toughened Networks. *J.W. Labadie, J.L. Hedrick, J.G. Hilborn, S.Y. Kim*
11:30 - 22. Thiophene-based Thermoplastic Poly(arylene ether)s. *J.M. Desimone, S. Stempel, E.T. Samulski*

Enhancement of Polymer Properties Through Mechanical or Chemical Means

T.J. Dolce and V. Gabara, Organizers

Monday, June 3, 1991

Philadelphia Ballroom
Polymer Reactions
G.S. Kirshenbaum, Presiding

- 2:05 - 23. The Enhancement of Polymer Properties by On and In Polymer Reactions. *E.M. Pearce, T.K. Kwei*
2:45 - 24. Assessing the Potential of Polyphosphazenes as Resists for Semi-Conductor Microlithography. *V.T. Stannett, R.T. Chern, G.L. Grune, J. Harada*
3:10 - 25. Modification of Permeable Substrates by Plasma Polymer Films Containing Metal Complexes for Use as O₂ Permeable Membranes. *J.M. Skelly, S.K. Clymer, A.L. Crumbliss, N.C. Morosoff, V.T. Stannett.*
3:35 - 26. Protein-Polymer Grafts. *S. Erhan, K. Kaleem, F. Chertok, T.A. Reddy,*
4:00 - 27. Structure and Surface Modification of Nylon-6 by Physico-Chemical Interaction with Bromine. *M. Lewin, H. Guttmann, A. Horn*
4:25 - 28. High Energy Effects on TGDDM/DDS Epoxy Graphite Fiber Composites. *R.E. Fornes, R.D. Gilbert, J.D. Memory*

Polymers for Designed Applications

James E. McGrath, Organizer

Monday, June 3, 1991

Wyndham Ballroom B
D.M. Braunstein, Presiding

- 2:00 Introductory Remarks
2:10 - 29. Optical and Electrical Properties of Pure and Doped Polyvinyl Butyral Films. *R. Gopalakrishnan, B. Muralikrishna, V.V.R. Narasimha Rao*
2:50 - 30. Polymers as Lubricant Viscosity Modifiers. *I. Rubin*
3:40 - 31. Design of Aqueous(Brine) Rheology Modifiers. *D. Schulz, J. Bock, P.L. Valint, Jr., J. Maurer, S.R. Turner, I. Duvdevani, R.M. Kowalik*

Recycling of Polymers

G.D. Andrews and P.M. Subramanian, Organizers

Monday, June 3, 1991

Wyndham Ballroom C
S. Dietz, Presiding

- 2:00 - 32. Perspectives on the Stabilization of Recycled Plastics. *P.P. Klemchuk*
2:25 - 33. PVC, Stabilizers and the Environment. *L.R. Brecker*
2:50 - 34. Evaluation of Polymer Biodegradation in a Controlled Microbial Chemostate. *G.L. Loomis, J.M. Romesser, W.J. Jewell.*
3:15 - 35. Mechanical Properties of Recycled Commingled Post Materials. *L. Cao, S.G. Byun, D.W. Baugh, C.L. Beatty, R. Ramer*
3:40 - 36. Accelerated Warpage and Water Sorption Tests on Recycled Plastic Posts. *I. Liedermoo, S. Fitzgerald, C.L. Beatty, R. Ramer*

- 4:05 - 37. Effects of Various Antistatic Agents in Thermoplastics. T. Christensen
 4:30 - 38. Issues and Opportunities in Heavy Metals Replacement. J. Cameron

High Performance Materials
P. M. Hergenrother and N.J. Johnston, Organizers

Monday, June 3, 1991

Wyndham Ballroom D
 N.J. Johnston, Presiding

- 1:30 - 39. Synthesis and Polymerization of Aryl Ether Cyclooligomers. *M.J. Mullins, E.P. Woo, C.C. Chen, D.J. Murray, M.T. Bishop, K.E. Bolon*
 2:00 - 40. Developments in the Chemistry of Oligocyclic Carbonates for Use in Structural Composites. *T.L. Evans, D.J. Brunelle, A.J. Salem, K.R. Stewart*
 2:30 - 41. Styrene Terminated Resins as Interlevel Dielectrics for Multichip Modules. *J.J. Zupancic, D.C. Blasej, T.G. Baker, E.A. Dinkel*
 3:00 - 42. Polyspirodilactam, A New Family of High Temperature Polymers. *P.C. Wang, W.J. Asbell, H.H. Chuah*
 3:30 - 43. Cure and Properties of a Liquid Dicyanate Ester/High Tg Polycyanurate System. *S.L. Simon, J.K. Gillham*
 4:00 - 44. Synthesis of Substituted Aramides and Their Blends. *S.H. Kim, S. Makhija, S. Oh, E.M. Pearce, T.K. Kwei*
 4:30 - 45. Nonlinear Elasticity of High Performance Fibers. *P.E. Klenzinger, K.S. Maclurk, R.K. Eby, W.W. Adams*

Enhancement of Polymer Properties Through Mechanical or Chemical Means
T.J. Dolce and V. Gabara, Organizers

Tuesday, June 4, 1991

Philadelphia Ballroom
 Blends/Alloys and Additives
 Eric Baer, Presiding

- 9:05 - 46. Polymer Blends - An Overview. *B.N. Epstein, J.A. Rakestraw, E.A. Flexman, D.D. Huang*
 9:45 - 47. Miscibility Maps for Copolymer-Copolymer Blends: A Comparison of Theoretical Predictions to Experimental Data. *M.M. Coleman, Y. Xu, H.X. Zhang, P.C. Painter*
 10:20 - 48. Blends of Styrene-Acrylic Acid Copolymers with Polyethers and Polyesters. *J.A. Kuphal, L.H. Sperling, L.M. Robeson*
 10:55 - 49. High Performance Polymer Blends: New Compatible Systems. *O.H. Schonherr, A. Schneller, U. Falk*

- 11:30 - 50. Main Chain-Side Chain Liquid Crystal Polymer Blends for Improved Physical Properties. *H.A.A. Rasoul, W.M. Cheng, R.W. Stackman*

Polymers for Designed Applications
J.E. McGrath, Organizer

Tuesday, June 4, 1991

Wyndham Ballroom B
 J. Verbicky, Presiding

- 9:00 Introductory Remarks
 9:10 - 51. Poly(trimethyl silyl propyne): A Unique Polymeric Absorbent for the Removal of Trace Organics from Air and Water Sources. *M. Langsam, L.M. Robeson*
 10:05 - 52. Template Synthesis of Electronically Conductive Polymers. *C.R. Martin, Z. Cai, L.S. Van Dyke, W. Liang*
 11:00 - 53. Syndioregic Mainchain Polymers for Nonlinear Optical Applications. *G.A. Lindsay, J.W. Fischer, R.A. Henry, J.M. Hoover, R.F. Kubin, M.D. Seltzer, J.D. Stenger-Smith*

Recycling of Polymers
G.D. Andrews and P.M. Subramanian, Organizers

Tuesday, June 4, 1991

Wyndham Ballroom C
 R. Ehrig, Presiding

- 9:00 - 54. Separation of Thermoplastics by Density Using Near and Supercritical Fluids as a Precursor to Recycling. *M.S. Super, R.M. Enick, E.J. Beckman*
 9:25 - 55. The Chemistry, Manufacture and Applications of a Family of High Carboxyl Content Acrylic Copolymers. *L.J. Wielgolinski*
 9:50 - 56. Selected Aspects of Poly(ethylene terephthalate) Solution Behavior. *L.M. Vana, F. Rodgriguez*
 10:15 - 57. Recoverable Polyimide Copolymers. *Y. Wu, G. Tesoro, P.I. Engelberg*
 10:40 - 58. Polymer Composites Using Unsaturated Polyester Resins Based on Recycled PET. *K.S. Rebeiz, D.W. Fowler, D.R. Paul*
 11:05 - 59. PET Based on Post Consumer Recycle: REPETE Polyester Resin. *R.E. Richard, W.H. Boon, M.L. Martin Shultz, E.A. Sisson*
 11:30 - 60. The Role of Miscibility in Polymer Recycling. *R.S. Stein*

PROGRAM SCHEDULE

SUNDAY JUNE 2, 1991 9-4 PM	SUNDAY JUNE 2, 1991 1-4 PM	SUNDAY JUNE 2, 1991 7-9 PM	MONDAY JUNE 3, 1991 8:30-12:00	MONDAY JUNE 3, 1991 1:30-5 PM	MONDAY JUNE 3, 1991 5:30-10:00 PM	TUESDAY JUNE 4, 1991 8:30-12	TUESDAY JUNE 4, 1991 1:30-5 PM	WEDNESDAY JUNE 5, 1991 8:30-12	WEDNESDAY JUNE 5, 1991 1:30-5 PM
Short Course "Polymer Chemistry for Teachers"	Conference On-Site Registration	Registration Welcoming Reception	Registration	Mixer 5:30 - 7:00 Anniversary Celebration 7:00 - 10:00		Registration	Registration	Registration	Registration
Short Course "Simulating Polymer Bulk Properties"			Symposia: Enhancement of Polymer Properties Through Mechanical or Chemical Means			Symposia: Enhancement of Polymer Properties Through Mechanical or Chemical Means		Symposia: Polymers for Designed Applications	
Short Course "Polymers for Applications in Nonlinear Optics"			Polymers for Designed Applications			Polymers for Designed Applications		Applications of Polymers for Biological Systems	
			Recycling of Polymers			Recycling of Polymers		Polymers for Hostile Environments	
			High Performance Polymers			High Performance Polymers		Barrier Polymers and Constructions	
			Exhibits			Application of Polymers for Biological Systems		Enhancement of Polymer Properties	
			Exhibits			Exhibits		Solvent Free Chemistry and Technology: Melt Processing Water-Borne Coatings 100% Solids Coatings	

High Performance Materials

P.M. Hergenrother and N.J. Johnston, Organizers

Tuesday, June 4, 1991

Wyndham Ballroom D
F. Harris, Presiding

- 8:30 - 61. Factors Affecting the Moisture Absorption and Dielectric Constant of Fluorinated Aromatic Polymers. *F.W. Mercer, T.D. Goodman*
- 9:00 - 62. New Fluorine-Containing Polyimides. *A.C. Misra, G.C. Tesoro, G. Hougham*
- 9:30 - 63. Performance Properties of Polyimides Incorporating 4,4'-Oxybis[3-(trifluoromethyl) benzenamine]. *R.A. Buchanan, R.F. Mundhenke, H.C. Lin*
- 10:00 - 64. Thioether and Thianthrene Containing Polyimides: Monomer and Polymer Formation via Nucleophilic Substitution. *M. Yoneyama, G. Cei, L.J. Mathias*
- 10:30 - 65. High Flow, High Molecular Weight Addition Curing Polyimides. *K.C. Chuang, R.D. Vannucci*
- 11:00 - 66. Crystallization Behavior and Morphology of LaRC-CPI, A Semicrystalline Thermoplastic Polyimide. *J.T. Muellerleile, G.L. Wilkes, D. Rodrigues, D. M. Jones*
- 11:30 - 67. A New Semi-Crystalline Polyimide (PI-2) for Fiber Reinforced Composites. *F.W. Harris, H.S. Lien, Y. Zhang, C.C. Tso, P.A. Gabori, S.Z.D. Cheng*

Enhancement of Polymer Properties Through Mechanical or Chemical Means

V. Gabara and T. Dolce, Organizers

Tuesday, June 4, 1991

Philadelphia North
L.F. Charbonneau, Presiding

- 1:30 - 68. Polymers, Processes and Additives as Systems. *R.R. Matheson*
- 2:10 - 69. The Effect of Additives on Tensile Properties of PPD-T Fibers. *K.S. Lee, S. Allen, V. Gabara*
- 2:45 - 70. Phase Behavior and Crystallization in Blends of Poly(butylene terephthalate) and Polyarylate. *J.P. Runt, D. Miley, X. Zhang, K. Gallagher*
- 3:20 - 71. Property and Morphology Relationships for Ternary Blends of Polycarbonate, Brittle Polymers, and an Impact Modifier. *H. Keskkula, T.W. Cheng, D.R. Paul*
- 3:55 - 72. Compatibilization of Blends of Crystallizable Polybutadiene Isomers by Precipitation and by Addition of Amorphous Diblock-Copolymer. *M.M. Nir, R.E. Cohen*
- 4:30 - 73. Recent Advances in the Application of Transmission Electron Microscopy to the Study of Polymers. *Y.P. Carignan, F. Cosandey*

Polymers for Designed Applications

J.E. McGrath, Organizer

Tuesday, June 4, 1991

Wyndham Ballroom B
P. Holmes, Presiding

- 2:00 Introductory Remarks
- 2:10 - 74. Determination of Novolak Resin Composition and Branching by ¹³C-NMR Spectroscopy. *L. Bogan, Jr.*
- 2:50 - 75. Technological Exploitation of the Viscoelastic Effects in Ultra Strong Polyethylene Fibers. *D. Prevorsek*
- 3:40 - 76. Condensation Polymers Containing 2,2',6,6'-Tetramethylbiphenyl-4,4'-Dicarboxylic Acid. *E. Paschke*

Applications of Polymers for Biological Systems

R. Langer and S.W. Shalaby, Organizers

Tuesday, June 4, 1991

Philadelphia South
C. Gardner, Presiding

- 2:00 Introductory Remarks, R. Langer
- 2:05 - 77. Use of the Outer Membrane Protein Complex of *Neisseria Meningitidis* as a Carrier for a Polysaccharide Antigen. *M.A. Liu, R.R. Deck, J.J. Donnelly*
- 2:55 - 78. Controlled Delivery of Water Soluble and Hydrolytically Unstable Anticancer Drugs from Polymeric Implants. *A. Domb, A. Olivi, K. Judy, C. Dureza, D. Lanartz, M.L. Pinn, S. Bogdanský, H. Brem*
- 3:25 - 79. Evaluation and Comparison of Biocompatibility of Various Classes of Polyhydrides. *M. Rock, M. Green, C. Fait, R. Geil, J. Myer, M. Maniar, A. Domb*
- 3:55 - 80. Strategies for the Optimization of Biocompatibility and Materials Properties in the Design of Degradable Biomaterials. *J. Kohn*
- 4:25 - 81. Use of Side Chain Crystalline Polymers as Controlled Release Dispensing Agents. *V.Y. Yoon, D.H. Carter, D.K. Bandom, R.F. Stewart, S.P. Bitler*

High Performance Materials

P.M. Hergenrother and N.J. Johnston, Organizers

Tuesday, June 4, 1991

Wyndham Ballroom D
N.J. Johnston, Presiding

- 1:30 - 82. Long Term Isothermal Aging and Thermal Analysis of N-Cycap Polyimides. *J.K. Sutter, J.F. Waters*
- 2:00 - 83. Blends of Low Melting Glasses with Polyetherimide and Polyethersulfone. *C.J. Quinn, G.H. Beall*
- 2:30 - 84. Fabrication and Characterization of a Polybenzimidazole/Polyimide Blend Matrix on Carbon Fibers. *E.C. Chenevey, W.M. Cooper, M. Glick, L. Halder, M. Jaffe*
- 3:00 - 85. Rigid-Rod Benzobisazole Polymers Containing Cyclic Phosphate Ester Groups. *J.P. Chen, F.E. Arnold*
- 3:30 - 86. Thiophene-based Liquid-Crystalline Poly(benzoxalones). *J.H. Promislow, E.T. Samulski, J. Preston*
- 4:00 - 87. Thiophene-based Liquid-Crystalline Poly(aramids). *S. Stomtel, E.T. Samulski, J. Preston*
- 4:30 - 88. Development of Elastomer Toughened Polyphenylene Sulfide. *J. Masamoto, K. Kubo*

Recycling of Polymers

G.D. Andrews and P.M. Subramanian, Organizers

Tuesday, June 4, 1991

Wyndham Ballroom C
G.D. Andrews, Presiding

- 2:00 - 89. Polyester/Polyolefin Blends. *S. Jabarin, S. Shah*
- 2:25 - 90. Composite Materials from Recycled Multi-Layer Polypropylene Bottles and Wood Fibers. *R. Simpson, S. Selke*
- 2:50 - 91. Process Requirements of the Reactive Compatibilization of Nylon 6/Polypropylene Blends. *S.S. Dagli, M. Xanthos, J.A. Biesenberger*
- 3:15 - 92. Properties of High Density Polyethylene from Post Consumer Recycled Containers. *P.S. Blatz*
- 3:40 - 93. Multilayer, Multi-Material Container Recycling (An Update). *R.H. Foster*
- 4:05 - 94. Recycling of RIM Polyurethanes. *W.J. Farrissey*
- 4:30 - 95. Plastic Scrap Reclaim: A Challenge for the Continuous Extrusion Process. *M. Mack*

Polymers for Designed Applications

J.E. McGrath, Organizer

Wednesday, June 5, 1991

Wyndham Ballroom B
G.A. Lindsay, Presiding

- 9:00 Introductory Remarks
- 9:10 - 96. Pyroelectric Behavior of Pure and Fe-Doped Cellulose Acetate Films. *A.K. Sharma, C. Ramu*
- 10:05 - 97. Elastomeric Matrices for Novel Model Propellant Systems. *T. Hawkins, M.S. El-Aaser, J.W. Vanderhoff*

- 11:00 - 98. Polymeric Materials Systems Designed for 700°F Applications. *J.E. McGrath, H. Grubbs, M.E. Rogers, W.A. Joseph, D. Rodriguez, G.L. Wilkes, W. Alston*

Applications of Polymers for Biological Systems

R. Langer and S.W. Shalaby, Organizers

Wednesday, June 5, 1991

Wyndham Ballroom C
J. Vacanti, Presiding

- 9:00 Introductory Remarks
- 9:05 - 99. Construction of New Tissue Substitutes Using Cell Polymer Implants for Application and Surgical Reconstruction and Transplantation. *J.P. Vacanti, J.E. Stein, J.C. Gilbert, C.A. Vacanti, R. Langer*
- 10:00 - 100. The Suitability of Synthetic Polymers of Differing Physical and Chemical Characteristics as a Matrix for Chondrocyte Implantation. *C.A. Vacanti, R. Langer, B. Schloo, J.P. Vacanti*
- 10:30 - 101. Using Three Dimensional Cell Culture to Mimick Tissues. *W.M. Saltzman, P. Parsons-Wingter, M. Parkhurst*
- 11:00 - 102. Polymers for Three Dimensional Cell Culture. *P. Parsons-Wingter, A. Tang, K. Leong, W. Mark Satzman*
- 11:30 - 103. Modification of Epidermal Growth Factors. *F.K. Nijeha, S.W. Shalaby*

Polymers for Hostile Environments

Anestis L. Logothetis, Organizer

Wednesday, June 5, 1991

Wyndham Ballroom D
A.L. Logothetis, I.V. Bletsos, Presiding

- 8:30 Introductory Remarks
- 8:35 - 104. Predictions for High Performance Polymers (Including First Super-Strong Polymers) for Hostile Environments. *F. Dowell*
- 8:55 - 105. Composite Parts for Hostile Environments. *S. Khan, G.P. Rears, W.H. Krueger*
- 9:15 - 106. Tefaire®-An Industrial Fabric Designed for the Filtration of Particulates in a Hostile Environment. *P.E. Frankenburg*
- 9:35 - 107. High Temperature Resistance of Fluoropolymers in Automotive Fuels. *M.S. Carpenter, S.E. Chillous, R.R. Will*
- 9:55 - 108. Perfluoroelastomers - Properties and Performance. *A.L. Logothetis, M. Beron*
- 10:15 - 109. Surface Characterization of Perfluoroelastomers Exposed to Reactive Plasma. *I.V. Bletsos, M.C. Plummer, Y.H. Kim, M. Beron, A.L. Logothetis, D.P. Carlson, L. Ojakaar*
- 10:35 - 110. Silicon Containing Polysulfone Engineering Resins for Aggressive Plasma Environments. *H.B. Yokelson, R.B. Morland, A.M. Palka, C.L. Hunt*
- 10:55 - 111. Polyoxadiazole-imides Containing the Hexafluoroisopropylidene Group. *C.J. Thaemlitz, W.J. Weikel, P.E. Cassidy*
- 11:15 - 112. Properties and Applications of PEKK. *J.H. Rogers*
- 11:35 - 113. Thermal Behavior of High Performance Poly(Aryl Ether Ketone Ketone). *B.S. Hsiao, I.Y. Chang*

Barrier Polymers and Constructions

L.M. Landoll, Organizer

Wednesday, June 5, 1991

Philadelphia Ballroom North
L.M. Landoll, Presiding

- 9:00 Introductory Remarks
- 9:05 - 114. Transport of Oxygen in Amorphous Nylons. The Role of Moisture. *R.R. Matheson, Jr., H.W. Starkweather, Jr., P. Avakian*
- 9:30 - 115. The Effects of Orientation on Transport of d-Limonene in Polypropylene. *M. Moaddeb, W.J. Koros*
- 9:55 - 116. Evaluation of the Equilibrium Solubility of Organic Compounds by Copolymer of Styrene and Divinylbenzene Using a Liquid Solid Chromatographic Procedure. *R. Hernandez, H. Hoojjat, J.R. Giacini*

- 10:20 - 117. Electron Grafted Organosilan Barrier Coatings. *S.V. Nablo, I.J. Rangwalla, J.E. Wyman*
- 10:45 - 118. Ultrathin Film Composite Gas Separation Membranes. *C. Gochanour*
- 11:10 - 119. Synthesis and Gas Transport Properties of Ultra-Thin Film Composite Membranes. *C.R. Martin, C. Liu, W. Liang, W.J. Chen*
- 11:35 - 120. Novel Barrier Materials Based on Butyl Rubber. *E. Wilusz, J.R. Brennick, D.K. Gulliano, K.D. Hassler*
- 12:00 - 121. Surface Profiling of Poly(Ethylene Terephthalate). *L.J. Fina, G. Chen*

Enhancement of Polymer Properties Through Mechanical or Chemical Means

V. Gabara and T. Dolce, Organizers

Wednesday, June 5, 1991

Philadelphia Ballroom South
T. Dolce, Presiding

- 9:00 - 122. Analysis of Structure-Property Relations in Crosslinked Epoxies. *U.M. Vakili, G.C. Martin*
- 9:45 - 123. Antioxidant Activity of Polymer-Bound Hindered Amines. *M.J. Rao, G. Scott, K.B. Chakraborty*
- 10:10 - 124. Exposure of Commercial Polymers to Gas Plasma: Wettability and Adhesion Studies. *W.L. Wade, Jr., R.J. Mammone, M. Binder*
- 10:35 - 125. Ionomeric Polyvinyl Butyral - A Novel Approach to Enhancing the Properties of Polyvinyl Butyral. *A.M. Dasgupta, D.J. David, P.A. Berger, E.E. Remsen*
- 11:00 - 126. Imaging of Polymer Chemiluminescence. *A.Y. Craig, R.H. Fleming*
- 11:25 - 127. Tetrafluoroethylene-chlorotrifluoroethylene-ethylene terpolymer. *A. Funaki, T. Kawasaki, S. Kodama, S. Kobayashi*

Polymers for Designed Applications

J.E. McGrath, Organizer

Wednesday, June 5, 1991

Wyndham Ballroom B
J.E. McGrath, Presiding

- 2:00 Introductory Remarks
- 2:10 - 128. Automated Prediction of Polymer Properties. *J. Manrique, D.W. Hughes*
- 2:50 - 129. Predicting Mechanical Properties of Amorphous Polymers. *M. Dygert, C.M. Venkatachalam, R. Waltham*
- 3:15 - 130. Polymer Adsorption Onto an Alpha-Aluminum Surface. *J.P. Puglia, N.C. Mitropoulos, J.C. Salamone*
- 3:40 - 131. High and Medium Molecular Weight Poly(vinylamine). *R.J. Badesso, T.W. Lai, R.K. Pinschmidt, Jr., D.J. Safi, B.R. Vijayendran*
- 4:30 - 132. Alignment Layers for Ferro and Antiferroelectric Liquid Crystal Cells. *Y.S. Negi, Y. Suzuki, T.H. Agiwaru, I. Kawamura, N. Yamamoto, Y. Yamada, K. Mori, M. Kakimoto, Y. Imai*

Applications of Polymers for Biological Systems

R. Langer and S.W. Shalaby, Organizers

Wednesday, June 5, 1991

Wyndham Ballroom B
S.W. Shalaby, Presiding

- 2:00 - 133. Low Modulus Radiation Sterilizable Monofilament Sutures. *D.F. Koelmel, D. Jamiolkowski, S.W. Shalaby, R.S. Bezwada*
- 2:30 - 134. Kinetics of Swelling of Polymers and Their Gels. *H. Schott*
- 3:00 - 135. A New Gas Discharge Process for Preparation of Non-Fouling Surfaces on Biomaterials. *M.S. Sheu, A.S. Hoffman, J.G.A. Terlingen, J. Feijen*
- 3:30 - 136. N-Hydroxybenzotriazole Active Esters of Serine: A New Route to Poly(Serine Esters). *M.E. Gelbin, J. Kohn*
- 4:00 - 137. Non-Thrombogenic Polymers by Surface Modification with Endothelial Cell Surface Heparan Sulfate (ESHs). *K.R. Jerg, M. Emonds, U. Muller, R. Keller, H. Baumann*

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Polymers for Hostile Environments

Anestis L. Logothetis, Organizer

Wednesday, June 5, 1991

Wyndham Ballroom C
 A.L. Logothetis, Presiding

- 1:30 Introductory Remarks
- 1:35 - 138. Solid State Forming Processes for Thermotropic Polyesters. G. Serpe, J. Kachidza, *J. Economy*
- 1:55 - 139. Application of Water-Soluble Polymers to Petroleum Production Under Hostile Environments. *H.L. Hsieh, A. Moradi-Araghi*
- 2:15 - 140. Elastomer Blends for Chemical Resistance. *E. McHugh, N. Schneider*
- 2:35 - 141. Degradation of Light-Cured Dental Polymers in the Hostile Oral Environment. *L.A. Linden, S. Morge, E.A. Adamszak, A. Bayati*
- 2:55 - 142. Quinone-Amine Polymers. V.S. Nithianandam, K. Kaleem, A.T. Reddy, *S. Erhan*
- 3:15 - 143. Thermal Degradation Profiles of Ordered Aromatic Heterocyclic Polymers. *S. Liebman, M.B. Wasserman, A.P. Snyder, R.A. Pesce-Rodriguez, R.A. Fifer, L. Denny, T. Helminiak*
- 3:35 - 144. Structure-Property Relationship in Hexafluoroisopropylidene-Containing Polymers. *D.M. Kane, P.E. Cassidy*
- 3:55 - 145. Polymers Derived from Hexafluoroacetone: The Oxidation of a Fluorinated Polymeric Polysulfide. *M.L. Cameron, P.E. Cassidy, K.N. Ludwig*
- 4:15 - 146. Bisoxazoline-Phenolic Resin - Low Flammability Composites for Aircraft Interiors. *M.L. Diviney, O. Tiba, B.M. Culbertson, R.J. Shafer*

- 4:35 - 147. Stability of Polystyrene on Halogenation - The Chain Scission in the Presence of Hydrogen Bromide. *J. Kiji, H. Konishi, T. Okano, M. Takeuchi*
- 4:55 - 148. Polymers for Consolidation of Natural Stone - A Concept and its Realization. *S. Wagoner, H. Hoecker*

Solvent Free Chemistry and Technology

B. Bartman, Organizer

Wednesday, June 5, 1991

Philadelphia Ballroom
 Melt Processing

R. German, Presiding

- 1:30 - 149. Torsional Braid Analysis: A Technique for Characterizing the Cure and Properties of Thermosetting Systems. *J. Gillham*
- 2:30 - 150. Synthesis of Tailor-Made Multipolymers and Polymer Alloys at Will by Melt Processing. *H. Craubner*
- 3:00 - 151. Micromixing in Viscous Polymer Melts. *C.D. Denson*
- 3:30 - 152. Graft Reactions of CoReactive Polymers in Extruder Reactor. *J.E. Curry*

Water-Borne Coatings

- 4:00 - 153. Computer Simulations of Particle Packing During the Drying of Paint Films. *M. Moen, S.G. Croll*
- 4:30 - 154. The Interaction of Associative Thickeners with Paint Components as Studied by the Use of a Fluorescently Labeled Model Thickener. *A. Kirk*

100% Solids Coatings

- 5:00 - 155. The Use of Light Stabilizers in Radiation Curable and Powder Coatings. *M. Holt*

Registration Form for Polymer Technology Conference

40th Anniversary of the AC Polymer Division • June 2-5, 1991 • Wyndham Franklin Plaza Hotel • Philadelphia, PA

Name _____

Organization _____

Mailing Address _____

City _____ State _____ Zip _____

Tel: (Business) _____ Fax _____

REGISTRATION:

The registration fee will include a mixer on Monday evening, 5:30-7:30 p.m., followed by a ticketed banquet. Short course fees do not include conference registration. Please send completed registration form and remittance, made payable to ACS Division of Polymer Chemistry, Inc., to: Diane M. Morrill, Division of Polymer Chemistry, 1103 Chemistry Research Building, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0212.

Registration Fee:	Before May 1, 1991	After May 1, 1991
Polymer Division Member	\$150.00	\$175.00
Non-member (includes member)	\$200.00	\$225.00
Student/unemployed	\$ 30.00	\$ 30.00
Daily Fee	—	\$100.00
Short Courses - Simulation and NLO	\$300.00	\$300.00
Short Course - Teachers	\$ 25.00	\$ 25.00
Banquet	\$ 35.00	\$ 35.00

Exhibitors are invited to participate in the Polymer Technology Conference. Rental is \$500.00 per booth (8'x10'); \$400.00 per additional booth.